TISHK INTERNATIONAL UNIVERSITY
FACULTY OF ENGINEERING
Department of CIVIL ENGINEERING,
2020-2021 Spring
Course Information for CE 432 PRESTRESSED CONCRETE

Course Name:	PRESTRESSED CONCRETE

Code	Regular Semester	Theoretical	Practical	Credits	ECTS
CE 432	8	3	-	3	

Name of Lecturer(s)-Academic Title:	Beyan Ubeyd Salim - Prof.
Teaching Assistant:	-
Course Language:	English
Course Type:	Area Elective
Office Hours	Monday 1:30 - 3:30 Thursday 10:30 - 12:30
Contact Email:	bayan.salim@tiu.edu.iq Tel:07507267240
Teacher's academic profile:	Professor of civil engineering Faculty of Engineering Ishik University
Course Objectives:	It is an elective course which provides additional knowledge to students who received previous reinforced concrete courses. Prestressed concrete is a technique provided to concrete members to counteract stresses resulted from large loading and/or large spans. the students will learn the techniques of producing prestressed concrete , how to analyze and design for flexure and shear, and how to control deflections of prestressed concrete members. students will work in groups to design real PC members, according to PBL method.
Course Description (Course overview):	Prestressed concrete simple beams: Stresses in service, at transfer. Loss of prestress. Ultimate limit states: flexure, shear torsion. Deflections (elastic). Continuous beams: primary and secondary moments (elastic analysis). Tendon concordancy, concept of line of pressure. Piles, circular prestressing. Design of detailing.

COURSE CONTENT

Week	Hour	Date	Topic
1	3	31/1-4/2/2021	Introduction to prestressed concrete
2	3	7-11/2/2021	Material properties of steel and concrete
3	3	14-18/2/2021	Prestressing systems
4	3	21-25/2/2021	flexural analysis
5	3	28/2-4/3/2021	flexural strength
6	3	7-11/3/2021	load balancing method
7	3	28/3-1/4/2021	allowable stress limits
8	3	4-8/4/2021	design examples
9	3	11-15/4/2021	Midterm Exam
10	3	18-22/4/2021	Prestress losses
11	3	25-29/4/2021	Lump-sum, separate losses
12	3	2-6/5/2021	Shear in PC members
13	3	9-13/5/2021	Methods of design, design examples
14	3	16-20/5/2021	Deflections of PC members
15	3	23-27/5/2021	Examples

16	3	30/5-3/6/2021	PBL Project seminars
17	3	6-10/6/2021	Final Exam
18	3	13-17/6/2021	Final Exam

COURSE/STUDENT LEARNING OUTCOMES

1	mastering prestressing techniques and material properties
2	ability to analyze and design for flexure of prestressed concrete P.C. members
3	ability to analyze and design for shear in P.C. members
4	ability to control deflections of P.C. members
5	ability to work in teams to integrally design a real PC system. PBL method

COURSE'S CONTRIBUTION TO PROGRAM OUTCOMES

(Blank : no contribution, I: Introduction, P: Profecient, A: Advanced)

	Program Learning Outcomes	**Cont.**
1	Apply principles of mathematics, science, and engineering	P
2	Design and conduct experiments, as well as analyze and interpret data accurately.	P
3	Design an engineering system, component, or process to meet desired industrial needs.	A
4	Identify, formulate and solve complex engineering problems	P
5	Apply, in design and construction, the most modern design codes, standards and specifications such as; AISC, ACI, ASCE 7, IBC, etc.	P
6	Use the techniques, skills, and modern engineering tools, such as surveying instruments, and designing software that are necessary for engineering practices.	P
7	Apply knowledge and skills in construction project management and recognition of international standards and methodologies	
8	Manage to work with multi-disciplinary teams and communicate effectively.	
9	Identify the moral values that ought to guide the Civil Engineering profession and resolve the moral issues in the profession.	
10	Apply the principles of sustainable development in their professional duties which go in line with the paramount safety, health and welfare of the public.	I
11	Analyze the impact of engineering solutions in a global and social context	
12	Identify the need and have the ability to engage in lifelong learning and knowledge of contemporary issues.	

Prerequisites (Course Reading List and References):	Reinforced concrete Design I and II Mechanics of Materials I and II
Student's obligation (Special Requirements):	Attendance, quizzes, assignments, midterm and final exams, projects and presentation
Course Book/Textbook:	Design of Concrete Structures, Nilson et al ACI 318 - 2019
Other Course Materials/References:	Design of prestressed concrete, Lin Design of reinforced concrete, McCormack
Teaching Methods (Forms of Teaching):	Lectures, Presentation, Project, Assignments

COURSE EVALUATION CRITERIA

Method	**Quantity**	**Percentage (%)**
Participation	1	5
Quiz	1	5
Project	1	20
Midterm Exam(s)	1	30
Final Exam	1	40
Total		**100**

Examinations: Essay Questions, True-False, Multiple Choices

Extra Notes:

ECTS (ALLOCATED BASED ON STUDENT) WORKLOAD

Activities	Quantity	Workload Hours for 1 quantity*	Total Workload
Theoretical Hours	18	3	54
Practical Hours	18	0	0
Final Exam	1	32	32
Participation	1	4	4
Quiz	1	6	6
Project	1	12	12
Midterm Exam(s)	1	18	18
Total Workload			**126**
ECTS Credit (Total workload/25)			**5.04**

Peer review

Signature:	Signature:	Signature:
Name:	Name:	Name:
Lecturer	Head of Department	Dean